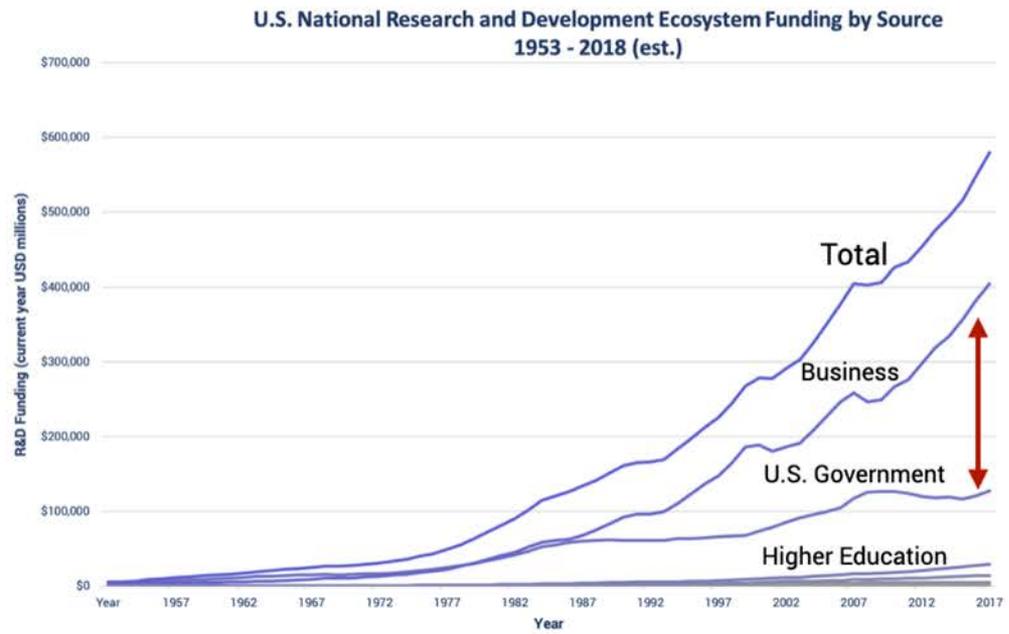


R&D Funding Trends

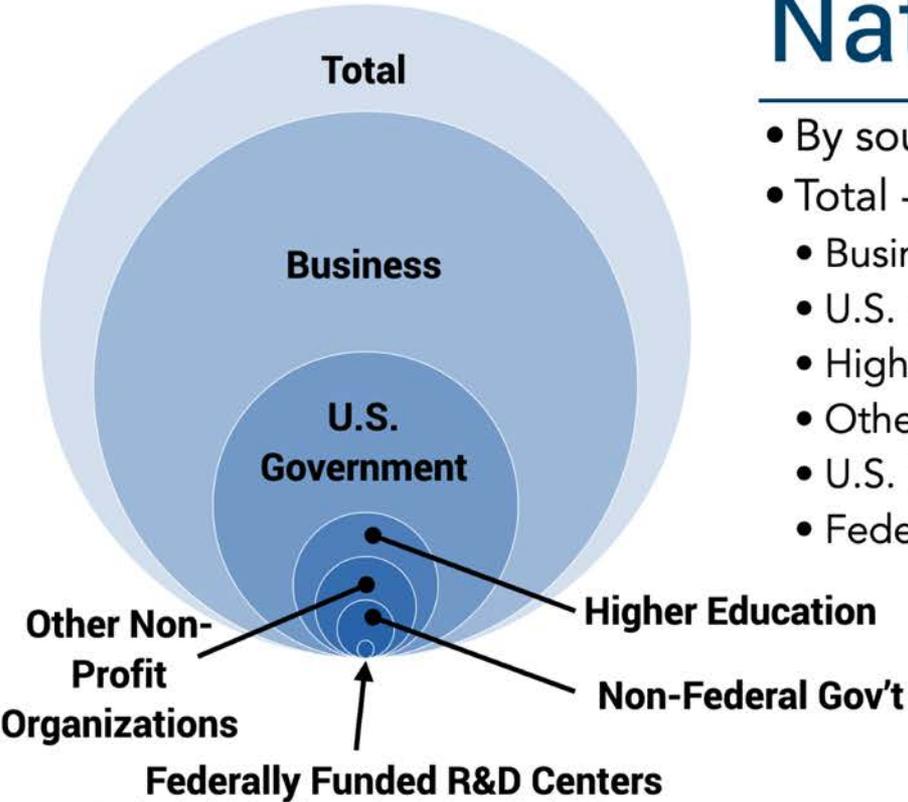
- Business sector
 - Drives total R&D funding
 - ~3.2x U.S. Government funding
- Deviation between Business and Government sectors *continues to increase*
- Three largest sources
 - ~\$580 billion (~97%)
 - Business (~70%)
 - Government (~22%)
 - Higher Education (~5%)



Note: Some data for 2017 are preliminary and may later be revised; data for 2018 are estimates.

National Science Foundation, National Center for Science and Engineering Statistics 2019. National Patterns of R&D Resources: 2017-18 Data Update. NSF 20-307 [Data File]. Alexandria, VA. Available at <https://ncses.nsf.gov/pubs/nsf20307>.

National R&D Funding



- By source (2018)
- Total - \$579,985
 - Business (Private Industry) - \$405,035
 - U.S. Federal Government - \$126,991
 - Higher Education - \$28,810
 - Other Non-Profit Organizations - \$13,943
 - U.S. Non-Federal Government - \$4,800
 - Federally Funded R&D Centers - \$405

Federally Funded R&D Centers spent ~ 5x the total DoD Research Enterprise budget

Current Year USD (millions)
Excludes funding received from other sources on list

Note: Some data for 2017 are preliminary and may later be revised; data for 2018 are estimates.

National Science Foundation, National Center for Science and Engineering Statistics 2019. *National Patterns of R&D Resources: 2017-18 Data Update*. NSF 20-307 [Data File]. Alexandria, VA. Available at <https://ncses.nsf.gov/pubs/nsf20307>.

State R&D Funding

2018 R&D Expenditures



2018 R&D Intensity



- Top five states by **expenditures** (2018)
 1. California - \$150,552 (28%)
 2. Massachusetts - \$31,299 (6%)
 3. Texas - \$27,113 (5%)
 4. Washington - \$24,958 (5%)
 5. Michigan - \$23,855 (4%)

- Top five states by **R&D Intensity** (2018)
 1. New Mexico
 2. Massachusetts
 3. California
 4. Maryland
 5. Washington

R&D Intensity is the ratio of total R&D performed in a state to its state GDP.

Note: Some data for 2017 are preliminary and may later be revised; data for 2018 are estimates.

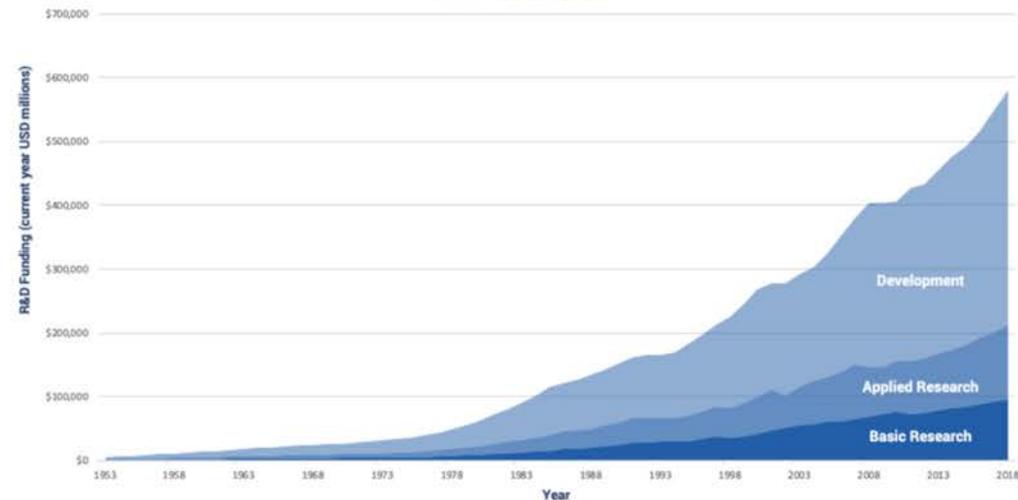
National Science Foundation, National Center for Science and Engineering Statistics 2019. *National Patterns of R&D Resources: 2017-18 Data Update*. NSF 20-307 [Data File]. Alexandria, VA. Available at <https://ncses.nsf.gov/pubs/nsf20307>.

National R&D Funding Trends

- Of \$580 billion* (2018)
 - Basic Research - 17%
 - Applied Research - 20%
 - Development - 64%
- More is being spent in
 - Development
 - Applied Research

*Rounding errors may result in a sum of more than 100%

Basic Research, Applied Research, and Development Funding
U.S. National R&D Ecosystem
1953 - 2018 (est.)



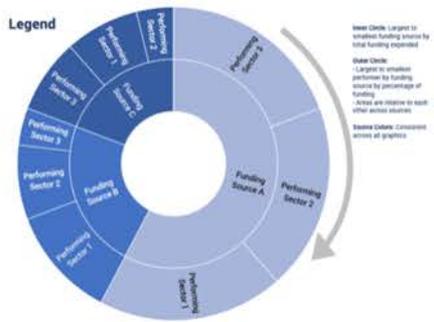
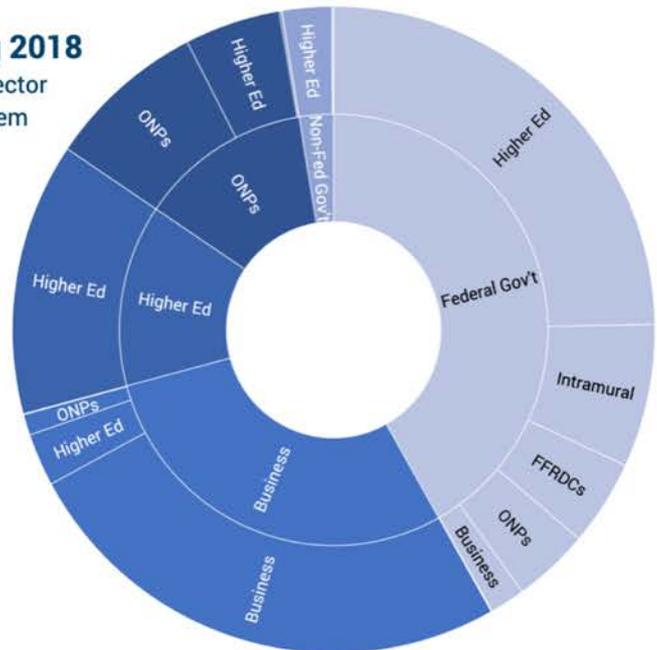
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Basic Research Funding

- \$96.5 billion (2018)
- Top funders
 - Federal Government - 42%
 - Business - 29%
 - Higher Education - 14%

Basic Research Funding 2018
by Source and Performing Sector
U.S. National R&D Ecosystem



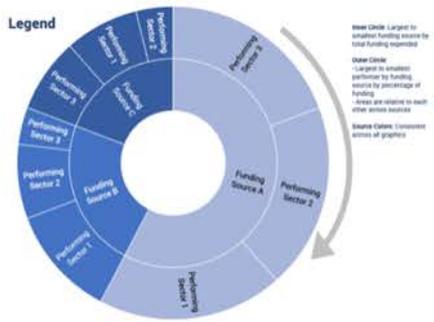
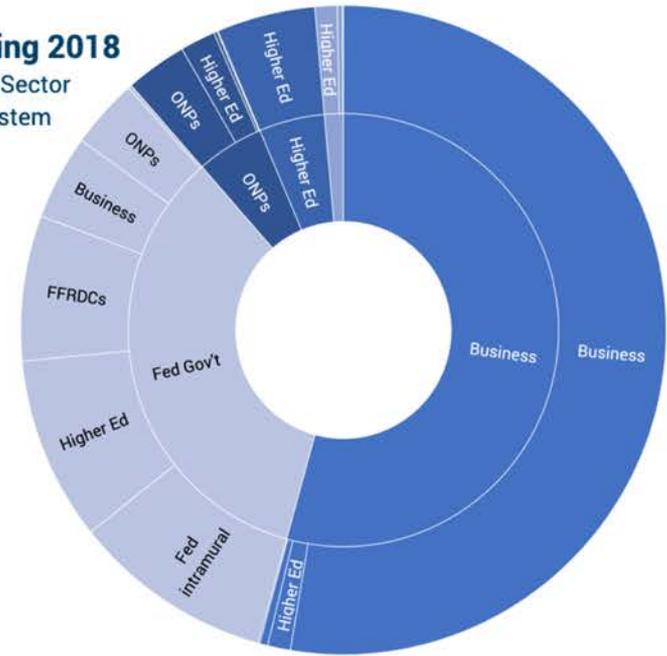
Note: Some data for 2017 are preliminary and may later be revised; data for 2018 are estimates.

National Science Foundation, National Center for Science and Engineering Statistics 2019, National Patterns of R&D Resources: 2017-18 Data Update. NSF 20-307 [Data File]. Alexandria, VA. Available at <https://ncses.nsf.gov/pubs/nsf20307>.

Applied Research Funding

- \$115 billion (2018)
- Top funders
 - Business - 54%
 - Federal Government - 34%
 - Higher Education - 5%
 - Other Non-Profits (ONPs) - 5%

Applied Research Funding 2018
by Source and Performing Sector
U.S. National R&D Ecosystem



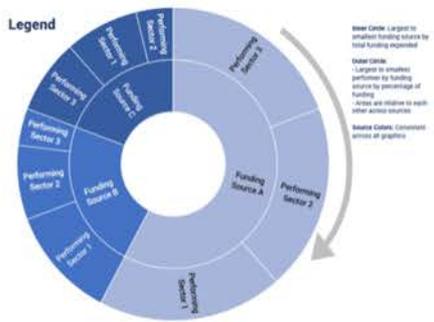
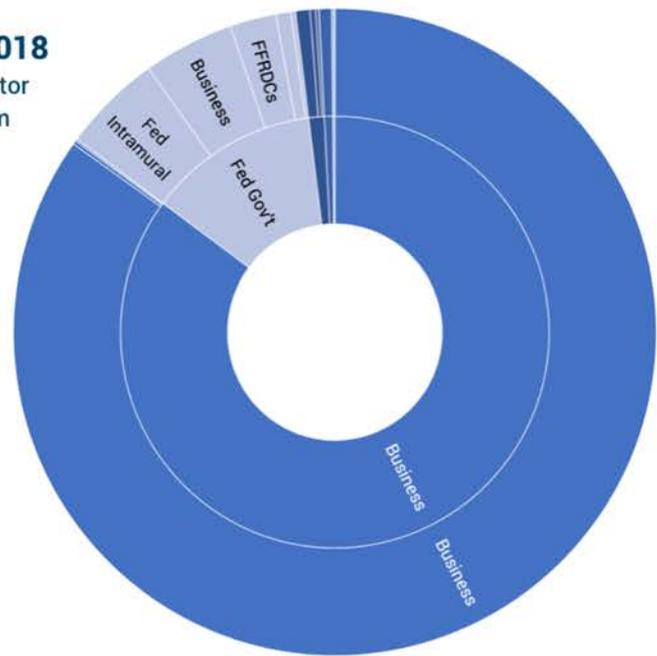
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National Science Foundation, National Center for Science and Engineering Statistics 2019. *National Patterns of R&D Resources: 2017-18 Data Update*. NSF 20-307 [Data File]. Alexandria, VA. Available at <https://nces.nsf.gov/pubs/nsf20307>.

Development Funding

- \$368.5 billion (2018)
- Top funders
 - Business - 85%
 - Federal Government - 13%
 - Higher Education - 1%
 - Other Non-Profits (ONPs) -1%

Development Funding 2018
by Source and Performing Sector
U.S. National R&D Ecosystem



Note: Some data for 2017 are preliminary and may later be revised; data for 2018 are estimates.

National Science Foundation, National Center for Science and Engineering Statistics 2019. *National Patterns of R&D Resources: 2017-18 Data Update*. NSF 20-307 [Data File]. Alexandria, VA. Available at <https://ncses.nsf.gov/pubs/nsf20307>.

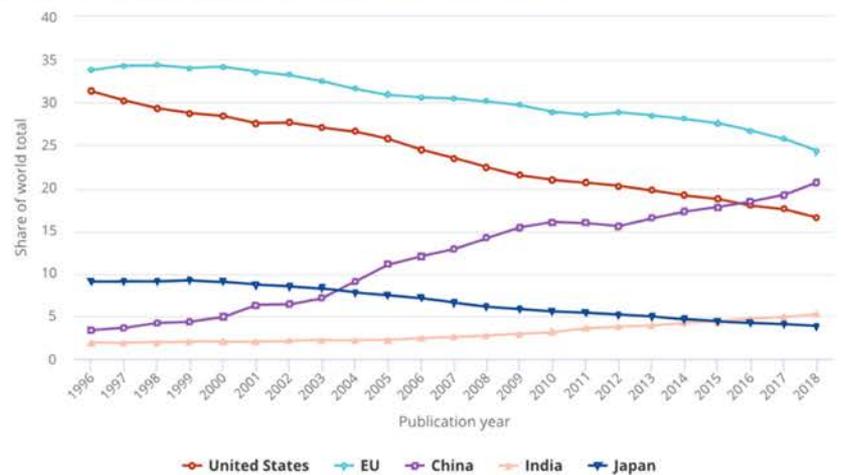
Science and Engineering Outputs

- Top global contributors (%)
 - European Union - 24.3%
 - China - 20.7%
 - United States - 16.5%
- Top global contributors (number)
 - Total - 2.6 million
 - China - 528,263
 - United States - 422,808
- United States continues to lag annual global growth rate

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FIGURE 5A-3

S&E articles, by global share of selected region, country, or economy: 1996–2018



EU = European Union.

National Center for Science and Engineering Statistics, National Science Foundation, Science-Metric, Elsevier, Scopus abstract and citation database, accessed June 2016.
Science and Engineering Indicators